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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,739	10/30/2003	Binh Vo	015114-068400US	3284

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EXAMINER

NGUYEN, STEVE N

ART UNIT	PAPER NUMBER
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2138

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/698,739	Applicant(s) VO ET AL.	
	Examiner Steve Nguyen	Art Unit 2138	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


GUY LAMARRE
PRIMARY EXAMINER

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-24 are currently pending.

Response to Amendment

2. The indicated allowability of claims 1-24 is withdrawn in view of the reference(s) to Abramovici. Rejections based on the cited reference(s) follow.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 5, 9, 12, 15, 17, 21, and 22 rejected under 35 U.S.C. 102(e) as being anticipated by Abramovici et al (US Pat. 6,966,020; hereinafter referred to as Abramovici).

As per claims 1, 9, 15:

Abramovici teaches a method for isolating failed routing resources on a programmable integrated circuit, the method comprising:

- receiving a set of failed test patterns, wherein a test pattern includes program bits that define how routing resources on the programmable integrated circuit are connected to form a test path (col. 5, lines 63-66), wherein a test pattern is designated as failing when a result from a test path is erroneous (col. 2, lines 19-21; col. 6, lines 9-16), wherein the result of the failed test path is created by applying one or more test values to the failed test path (col. 6, lines 26-31);
- identifying a subset of the routing resources that occur most frequently in the failed test paths (col. 7, lines 17-25, 40-44; the routing resources that remain in the reconfigured regions are the ones that occur most frequently); and
- generating new test patterns including program bits that define new test paths for testing the subset of the routing resources that occurred most frequently in the failed test paths, wherein each routing resource of the subset is included in at least one corresponding new test path, each corresponding new test path including: that routing resource; and at least one other resource that was not previously coupled with that routing resource in one of the failed test paths (col. 8, line 60 to col. 9, line 9; Fig. 10).

As per claim 2:

Abramovici further teaches the method according to claim 1 further comprising: testing the new test patterns using a test system to isolate routing resources among the subset of the routing resources that caused the erroneous results in the failed test patterns (col. 3, lines 9-12).

As per claim 5:

Abramovici further teaches the method according to claim 1 wherein each of the failed test paths and the new test paths connect a control point to an observation point on the programmable integrated circuit (col. 5, lines 59-62; a scan chain connects a control point to an observation point, and the PLD is a part of the scan chain).

As per claims 12 and 17:

Abramovici further teaches the computer program product of claim 9 further comprising: code for testing the new test patterns to isolate routing resources among the subset that caused the erroneous results in the failed test patterns (col. 3, lines 9-12).

As per claim 21:

Abramovici further teaches the method of claim 1, wherein each of the at least one corresponding new test path is used to determine whether that corresponding routing resource has failed (col. 8, line 60 to col. 9, line 9).

As per claim 22:

Abramovici further teaches the method of claim 1, wherein the erroneous result of a failed test path is an output value of the failed test path that does not equal an expected value (col. 6, lines 26-31).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 3, 4, 6-8, 11, 13, 14, 16, 18-20, 23, and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Abramovici.

As per claims 3, 13, 18:

Abramovici teaches the method according to claim 1 above. Not explicitly disclosed is generating new test patterns for new test paths that route through every combination of fan-in resources and fan-out resources that are programmably connectable to each of the subset of the routing resources.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to do so because Abramovici teaches generating new test patterns for all combinations of a rerouted test path (col. 8, line 60 to col. 9, line 9).

As per claims 4, 11:

Abramovici teaches the method according to claim 1 above. Not explicitly disclosed is generating new test patterns for test paths that route through clock and clear signal routing resources. However, a person of ordinary skill in the art at the time the invention was made would have recognized that the logic blocks of Abramovici (col.

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6, lines 23-24) would have necessarily included clock and clear signal routing resources because Abramovici discloses a boundary-scan interface (col. 5, lines 59-62).

As per claims 6, 14, 19:

Abramovici teaches the method according to claim 1 above. Not explicitly disclosed is wherein the routing resources have more than 1000 times as many routing resources as the subset of routing resources. However, one of ordinary skill in the art at the time the invention was made would have recognized that a modern circuit would have contained many thousands of routing resources.

As per claims 7, 10, 16:

Abramovici further teaches receiving a test log file that indicates the observation points for the failed test paths (col. 5, lines 55-59).

As per claims 8 and 20:

Abramovici teaches the method according to claim 1 above. Not explicitly disclosed is wherein identifying the subset of the routing resources that occur most frequently in the failed test paths further comprises: extracting the routing resources that are connected along each of the failed test paths using a connectivity graph. However, it would have been obvious to one of ordinary skill in the art to do so because shows the extraction of failed paths using the drawing of Fig. 10.

As per claim 23:

Abramovici teaches the method of claim 2, wherein the testing a new test pattern tests a clock control point and comprises: scanning in a first value to a failed resource; scanning in a second value to a data control point coupled with the failed resource;

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scanning out the value stored in the failed resource and comparing that value to the first value (col. 6, lines 59-62).

Not explicitly disclosed by Abramovici is transmitting a clock signal from the clock control point to the failed resource; and scanning out the value stored in the failed resource and comparing that value to the second value. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to transmit and compare a clock signal because Abramovici teaches comparing test patterns to a second and third group of routing resources (col. 6, lines 60-64).

As per claim 24:

Abramovici teaches the method of claim 2, wherein the testing a new test pattern tests a clear control point and comprises: scanning in a first value into a failed resource; scanning out the value stored in the failed resource and comparing that value to the first value (col. 6, lines 59-62).

Not explicitly disclosed by Abramovici is transmitting a clear signal from the clear control point to the failed resource; and scanning out the value stored in the failed resource and comparing that value to a clear value. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to transmit and compare a clock signal because Abramovici teaches comparing test patterns to a second and third group of routing resources (col. 6, lines 60-64).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Nguyen whose telephone number is (571) 272-7214. The examiner can normally be reached on M-F, 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steve Nguyen
Examiner
Art Unit 2138

